WHAT IS CLAIMED IS:

1. A recombinant cytomegalovirus (CMV), comprising a cytomegalovirus (CMV) genome which comprises a first heterologous nucleotide sequence encoding a heterologous chemokine element, and (ii) a second heterologous nucleotide sequence encoding an immunogenic polypeptide.

2. The recombinant CMV of claim 1, wherein the CMV genome is encapsulated in infectious form as a virion.

3. The recombinant CMV of claim 2, wherein the CMV genome is attenuated to reduce virulency in a host.

4. The recombinant CMV of claim 3, wherein a viral dissemination gene is disabled.

5. The recombinant CMV of claim 4, wherein the viral dissemination gene is a gene encoding a viral chemokine element or a viral immune-modulatory gene.

6. The recombinant CMV of claim 5, wherein the gene encoding the viral chemokine element is selected from the group consisting of US28, US27, UL33, UL78, UL146, UL147, MCK-1 and MCK-2, or a homolog thereof.

7. The recombinant CMV of claim 5, wherein the viral immune-modulatory gene is selected from the group consisting of UL111A, US3, US6, US11, US2, UL83, UL18, UL40, m144, m152, m04, m06 and m138, or a homolog thereof.

8. The recombinant CMV of claim 3, wherein the CMV genome is attenuated to reduce virulency in a mammal.

9. The recombinant CMV of claim 3, wherein the host is selected from the group consisting of a non-human primate and commercial livestock.

10. The recombinant CMV of claim 8, wherein the mammal is a rhesus monkey.

11. The recombinant CMV of claim 8, wherein the mammal is a mouse.

12. The recombinant CMV of claim 3, wherein the heterologous chemokine element is endogenous to the host.

13. The recombinant CMV of claim 12, wherein the heterologous chemokine element is a chemokine ligand.

14. The recombinant CMV of claim 12, wherein the heterologous chemokine element is a chemokine receptor.

15. The recombinant CMV of claim 12, wherein the CMV genome is attenuated to reduce virulency in a mammal and the heterologous chemokine element is selected from the group consisting of MIP3α, SLC, MDC, MC10, MIP1β, ELC and CCR7, or a homolog thereof.

16. The recombinant CMV of claim 2, wherein the immunogenic polypeptide comprises an antigen from a pathogenic organism or a tumor antigen.

17. The recombinant CMV of claim 16, wherein the pathogenic organism is a bacterium, a virus or a parasite.

18. The recombinant CMV of claim 17, wherein the immunogenic polypeptide comprises a fragment of a polypeptide from organisms selected from the group consisting of Bacillus anthracis, Dengue, Yersinia pestis, Ebola, Marburg, Lassa, Venezulean Equine Encephalitis and Eastern Equine Encephalitis.

19. The recombinant CMV of claim 16, wherein the immunogenic polypeptide comprises a tumor antigen.

20. The recombinant CMV of claim 19, wherein the tumor antigen is selected from the group consisting of antigens associated with breast cancers, lung cancers, thryroid carcinomas, squamous cell carcinomas and renal cell carcinomas.

21. The recombinant CMV of claim 3, wherein the first and second heterologous nucleotide sequence are operably linked to a promoter that is operative in the host.

22. The recombinant CMV of claim 21, wherein the first and second heterologous nucleotide sequence are operably linked to different promoters that are operative in the host.

23. The recombinant CMV of claim 3, wherein the construct is formulated as a composition, the composition comprising the construct and a pharmaceutically acceptable adjuvant, carrier, diluent or excipient.

24. The recombinant CMV of claim 2, wherein

(a) the immunogenic polypeptide comprises an antigen from an organism that is pathogenic in humans or a human tumor antigen;

(b) a viral chemokine element or a viral immune-modulatory gene is disabled, the viral chemokine element selected from the group consisting of US28, US27, UL33, UL78, UL146 and UL 147 and the viral immune-modulatory gene selected from the group consisting of UL111A, US3, US6, US11, US2, UL83, UL18 and UL40; and

(c) the heterologous chemokine element is selected from the group consisting of MIP3α, SLC, MDC, MC10, MIP1β, ELC and CCR7, or a homolog thereof.

25. The recombinant CMV of claim 2, wherein

(a) the immunogenic polypeptide comprises an antigen from a pathogenic organism or a tumor antigen;

(b) a viral chemokine element or a viral immune-modulatory gene is disabled, the viral chemokine element selected from the group consisting of rhUS28.1, rhUS28.2, rhUS28.3, rhUS28.4, rhUS28.5, rhUL33 and rhUL78 and the viral immune-modulatory gene selected from the group consisting of rhUL111A, US3, US6, US11, US2, UL83 and UL40; and

(c) the heterologous chemokine element is selected from the group consisting of MIP3α, SLC, MDC, MC10, MIP1β, ELC and CCR7, or a homolog thereof.

26. The recombinant CMV of claim 2, wherein

(a) the immunogenic polypeptide comprises an antigen from a pathogenic organism or a tumor antigen;

(b) a viral chemokine element or a viral immune-modulatory gene is disabled, the viral chemokine element selected from the group consisting of MUL33, MUL78, MCK-1 and MCK-2 and the viral immune-modulatory gene selected from the group consisting of m144, m152, m04, m06, m138; and

(c) the heterologous chemokine element is selected from the group consisting of MIP3α, SLC, MDC, MC10, MIP1β, ELC and CCR7, or a homolog thereof.

27. A recombinant cytomegalovirus (CMV) comprising a cytomegalovirus (CMV) genome that comprises a heterologous nucleotide sequence encoding a heterologous chemokine receptor or ligand.

28. The recombinant CMV of claim 27, wherein the CMV genome is attenuated to reduce virulency in a host and encapsulated in infectious form.

29. The recombinant CMV of claim 28, wherein the CMV genome is attenuated by virtue of a disabled viral dissemination gene and/or a viral immune-modulatory gene.

30. The recombinant CMV of claim 27, wherein the chemokine element is endogenous to the host.

31. A recombinant CMV comprising a cytomegalovirus (CMV) genome that comprises a heterologous nucleotide sequence encoding an immunogenic polypeptide.

32. The recombinant CMV of claim 31, wherein the CMV genome is attenuated to reduce virulency in a host and encapsulated in infectious form.

33. The recombinant CMV of claim 32, wherein the CMV genome is attenuated by virtue of a disabled viral dissemination gene and/or a viral immune-modulatory gene.

34. The recombinant CMV of claim 31, wherein immunogenic polypeptide comprises an antigen from an organism that is pathogenic in a host or a tumor antigen.

35. A method for inducing an immune response in a host, the method comprising administering a composition to a host, wherein the composition comprises a recombinant cytomegalovirus (CMV) with a genome that contains (i) a first heterologous nucleotide sequence encoding a heterologous chemokine element, and (ii) a second heterologous nucleotide sequence encoding an immunogenic polypeptide.

36. The method of claim 35, wherein the CMV genome is attenuated to reduce virulency in the host.

37. The method of claim 36, wherein a viral dissemination gene is disabled.

38. The method of claim 37, wherein the viral dissemination gene is a gene encoding a viral chemokine element or a viral immune-modulatory gene.

39. The method of claim 38, wherein the gene encoding the viral chemokine element is selected from the group consisting of US28, US27, UL33, UL78, UL146, UL147, MCK-1 and MCK-2, or a homolog thereof.

40. The method of claim 38, wherein the viral immune-modulatory gene is selected from the group consisting of UL111A, US3, US6, US11, US2, UL83, UL18, UL40, m144, m152, m04, m06 and m138, or a homolog thereof.

41. The method of claim 35, wherein the heterologous chemokine element is endogenous to the host.

42. The method of claim 41, wherein the heterologous chemokine element is a chemokine ligand.

43. The method of claim 41, wherein the heterologous chemokine element is a chemokine receptor.

44. The method of claim 41, wherein the host is a mammal and the heterologous chemokine element is selected from the group consisting of MIP3α, SLC, MDC, MC10, MIP1β, ELC and CCR7, or homolog thereof.

45. The method of claim 35, wherein the immunogenic polypeptide comprises an antigen from a pathogenic organism or a tumor antigen.

46. The method of claim 45, wherein the pathogenic organism is a bacterium, a virus or a parasite.

47. The method of claim 35, wherein

(a) the host is a human;

(b) a viral chemokine element or a viral immune-modulatory gene is disabled, the viral chemokine element selected from the group consisting of US28, US27, UL33, UL78, UL146 and UL147 and the viral immune-modulatory gene selected from the group consisting of UL111A, US3, US6, US11, US2, UL83, UL18 and UL40;

(c) the heterologous chemokine element is selected from the group consisting of MIP3α, SLC, MDC, MC10, MIP1β, ELC and CCR7, or a homolog thereof; and

(d) the immunogenic polypeptide comprises an antigen from an organism that is pathogenic in humans or a human tumor antigen.

48. The method of claim 35, wherein

(a) the host is a rhesus monkey;

(b) a viral chemokine element or a viral immune-modulatory gene is disabled, the viral chemokine element selected from the group consisting of rhUS28.1, rhUS28.2, rhUS28.3, rhUS28.4, rhUS28.5, rhUL33 and rhUL78 and the viral immune-modulatory gene selected from the group consisting of rhUL111A, US3, US6, US11, US2, UL83 and UL40;

(c) the heterologous chemokine element is selected from the group consisting of MIP3α, SLC, MDC, MC10, MIP1β, ELC and CCR7, or a homolog thereof; and

(d) the immunogenic polypeptide comprises an antigen from a pathogenic organism or a tumor antigen.

49. The method of claim 35, wherein

(a) the host is a mouse;

(b) a viral chemokine element or a viral immune-modulatory gene is disabled, the viral chemokine element selected from the group consisting of MUL33, MUL78, MCK-1 and MCK-2 and the viral immune-modulatory gene selected from the group consisting of m144, m152, m04, m06, m138;

(c) the heterologous chemokine element is selected from the group consisting of MIP3α, SLC, MDC, MC10, MIP1β, ELC and CCR7, or a homolog thereof; and

(d) the immunogenic polypeptide comprises an antigen from a pathogenic organism or a tumor antigen.

50. A therapeutic or prophylactic treatment method, the method comprising administering a composition to an animal, wherein

(a) the composition comprises an attenuated recombinant cytomegalovirus (CMV) with a genome that contains (i) a first nucleotide sequence encoding a chemokine receptor or chemokine that is endogenous to the animal, and (ii) a second nucleotide sequence encoding an immunogenic polypeptide; and

(b) the immunogenic polypeptide comprises an antigen correlated with a disease or infection which the animal has or is susceptible to obtaining; and whereby

the administered composition induces an immune response in the animal.

51. The method of claim 50, wherein the CMV genome is attenuated by virtue of a disabled viral dissemination gene.

52. The method of claim 51, wherein the viral dissemination gene is a gene encoding a viral chemokine element or a viral immune-modulatory gene.

53. The method of claim 52, wherein the gene encoding the viral chemokine element is selected from the group consisting of US28, US27, UL33, UL78, UL146, UL147, MCK-1 and MCK-2, or a homolog thereof.

54. The method of claim 52, wherein the viral immune-modulatory gene is selected from the group consisting of UL111A, US3, US6, US11, US2, UL83, UL18, UL40, m144, m152, m04, m06 and m138, or a homolog thereof.

55. The method of claim 50, wherein the animal is a mammal.

56. The method of claim 50, wherein the animal is selected from the group consisting of a human, a non-human primate and commercial livestock.

57. The method of claim 55, wherein the mammal is selected from the group consisting of a non-human primate and a mouse.

58. The method of claim 50, wherein

(a) the animal is a human;

(b) the CMV genome is attenuated by virtue of a disabled viral chemokine element or a viral immune-modulatory gene, the viral chemokine element selected from the group consisting of US28, US27, UL33, UL78, UL146 and UL147 and the viral immune-modulatory gene selected from the group consisting of UL111A, US3, US6, US11, US2, UL83, UL18 and UL40; and

(c) the heterologous chemokine element is selected from the group consisting of MIP3α, SLC, MDC, MC10, MIP1β, ELC and CCR7, or a homolog thereof.

59. The method of claim 50, wherein

(a) the animal is a rhesus monkey;

(b) the CMV genome is attenuated by virtue of a disabled viral chemokine element or a viral immune-modulatory gene, the viral chemokine element selected from the group consisting of rhUS28.1, rhUS28.2, rhUS28.3, rhUS28.4, rhUS28.5, rhUL33 and rhUL78 and the viral immune-modulatory gene selected from the group consisting of rhUL111A, US3, US6, US11, US2, UL83 and UL40; and

(c) the heterologous chemokine element is selected from the group consisting of MIP3α, SLC, MDC, MC10, MIP1β, ELC and CCR7, or a homolog thereof.

60. The method of claim 50, wherein

(a) the animal is a mouse;

(b) the CMV genome is attenuated by virtue of a disabled viral chemokine element or a viral immune-modulatory gene, the viral chemokine element selected from the group consisting of MUL33, MUL78, MCK-1 and MCK-2 and the viral immune-modulatory gene selected from the group consisting of m144, m152, m04, m06, m138; and

(c) the heterologous chemokine element is selected from the group consisting of MIP3α, SLC, MDC, MC10, MIP1β, ELC and CCR7, or a homolog thereof.

61. A method of preparing a recombinant CMV, comprising inserting into a CMV genome (i) a first heterologous nucleotide sequence encoding a heterologous chemokine element, and (ii) a second heterologous nucleotide sequence encoding an immunogenic polypeptide.

62. The method of claim 61, further comprising attenuating the CMV genome to reduce virulency in a host.

63. The method of claim 62, wherein attenuation comprises disabling a viral dissemination gene.

64. The method of claim 63, wherein the viral dissemination gene is a gene encoding a viral chemokine element or a viral immune-modulatory gene.

65. The method of claim 64, wherein the gene encoding the viral chemokine element is selected from the group consisting of US28, US27, UL33, UL78, UL146, UL147, MCK-1 and MCK-2, or a homolog thereof.

66. The method of claim 64, wherein the viral immune-modulatory gene is selected from the group consisting of UL111A, US3, US6, US11, US2, UL83, UL18, UL40, m144, m152, m04, m06 and m138, or a homolog thereof.

67. The method of claim 61, wherein the CMV genome is attenuated to reduce virulency in a mammal.

68. The method of claim 62, wherein the host is selected from the group consisting of a human, a non-human primate and commercial livestock.

69. The method of claim 67, wherein the mammal is selected from the group consisting of a rhesus monkey and a mouse.

70. The method of claim 62, wherein the heterologous chemokine element is endogenous to the host.

71. The method of claim 70, wherein the heterologous chemokine element is a chemokine ligand.

72. The method of claim 70, wherein the heterologous chemokine element is a chemokine receptor.

73. The method of claim 70, wherein the heterologous chemokine element is selected from the group consisting of MIP3α, SLC, MDC, MC10, MIP1β, ELC and CCR7, or homolog thereof.

74. The method of claim 62, wherein the immunogenic polypeptide comprises an antigen from a pathogenic organism or a tumor antigen.

75. The method of claim 74, wherein the pathogenic organism is a bacterium, a virus or a parasite.

76. The method of claim 61, further comprising inserting at least one promoter that is operative in the host into the CMV genome such that the at least one promoter is operably linked to the first and second heterologous nucleotide sequence.

77. The method of claim 61, further comprising inserting at least two promoters that are operative in the host into the CMV genome such that the first and second heterologous nucleotide sequence are operably linked to different promoters.

78. The method of claim 61, further comprising combining the recombinant CMV of claim 1 with a pharmaceutically acceptable carrier, diluent or excipient.